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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,322	05/01/2001	Nobufumi Mori	Q64266	2257
7590 06/20/2005				
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		EXAMINER		
		PHAM, HAI CHI		
		ART UNIT		PAPER NUMBER
		2861		

DATE MAILED: 06/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/845,322	Applicant(s) MORI ET AL.	
	Examiner Hai C. Pham	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-11, 17 and 23-111 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) See Continuation Sheet is/are allowed.
- 6) ☒ Claim(s) 17, 23, 29, 35, 36, 42, 48, 54, 60, 66, 72-77, 83, 84, 90, 91, 97, 98, 104, 105 and 111 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims allowed are 7-11,24-28,30-34,37-41,43-47,49-53,55-59,61-65,67-71,78-82,85-89,92-96,99-103 and 106-110.

DETAILED ACTION

Allowable Subject Matter

1. The indicated allowability of claim 23 is withdrawn in view of the newly discovered reference to Naruse et al. (U.S. 6,340,561). Rejections based on the newly cited reference follow.

Claim Objections

2. Claim 12 is objected to because of the following informalities:
 - Applicants have indicated in the Amendment submitted on 04/08/05 at page 6 that claim 12 is canceled. However, claim 12 is still found listed in its entirety on the same page. The Applicants are requested to confirm the cancellation of the claim 12 by deleting claim 12 in their next response to this office action.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 17, 29, 42, 48, 54, 66, 72, 83, 90, 104 and 111 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mouri et al. (U.S. 5,073,791) in view of Nomura et al. (U.S. 5,866,293) and Nakao et al. (U.S. 5,216,438).

Mouri et al. discloses an image forming apparatus including a photosensitive cartridge (13) for housing the light and heat sensitive recording material (photo-sensitive and heat-developing material 11) to be supplied to the imaging exposure portion (2) located further downstream where the photo-sensitive and heat-developing material is imagewise exposed by the laser exposure means (10), a further downstream heating developing portion (3) where the photo-sensitive and heat-developing material is subjected to heating development at 120° C, and the fixing unit (whole-surface exposure portion 4) where the photo-sensitive and heat-developing material is subjected to fixing by exposure from a light source (22).

Mouri et al. does not explicitly specify the wavelength of the light source of the fixing unit, although this means that a light source of any appropriate wavelength could be used for the fixing unit. Mouri et al. also fails to teach the light fixing having an intensity so as to provide an illumination of 10,000 to 50,000,000 lux.

Nomura et al. discloses a light and heat-sensitive recording material being supplied and a method for recording an image, which comprises exposing the light and heat-sensitive recording material to light, heat developing and fixing the recording material, wherein the light sources used for fixing images includes fluorescent lamps, a white or visible light, wherein the illumination of the light fixation would be set at 32,000 lux (col. 27, lines 59-65).

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It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate a light source emitting a visible light in the fixing unit of Mouri et al. as taught by Nomura et al. since any light source is acceptable in the device of Mouri et al. The motivation for doing so would have been to provide an inexpensive and easy to use light source as a fixing unit.

Mouri et al. also teaches providing a cutter (16), but fails to teach the cutter being disposed after the optical fixing section, and a second light source whose intensity maximum wavelength is different from that of the first light source.

Nakao et al. discloses a color thermal printing system comprising either a single exposure light source (23) or two exposure light sources (23 and 31) for exposing the light and heat sensitive recording medium (10), the first light source (23) emitting ultraviolet rays of 420 nm wavelength to expose the yellow recording layer (24) while the second light source (31) emits near ultraviolet rays of about 365 nm to expose the magenta recording layer. Nakao et al. also discloses a cutter (39) located downstream to cut the recording medium into individual sheets, which are ejected onto the receiving tray (40).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the second exposure light source in the device of Mouri et al. as taught by Nakao et al. for the purpose of recording a full-color image and to also rearrange the cutter to downstream location as taught by Nakao et al. so as to keep the tension of the conveyed recording medium at the proper level during its exposure.

Mouri et al. further teaches the image exposure unit provided with a light source that includes laser, LEDs, fluorescent lamp, whose wavelength would range anywhere from 300 to 1100 nm, the recording material having compositions with sensitivity at 300 to 370 nm, the heating developing portion developing the recording material with a heating temperature of 120° C, and the image recording relates only to processing of a single sheet (the recording material being cut into single sheets by the cutter 16) (see also col. 3, lines 49-52). Mouri et al. further teaches the cartridge or casing section, the optical recording portion (2), the developing portion (3) and the fixing portion (4) being arranged in a vertical configuration (Fig. 1).

5. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mouri et al. in view of Nomura et al. and Nakao et al., as applied to claim 17 above, and further in view of Naruse et al. (U.S. 6,340,561).

Mouri et al., as modified, discloses all the basic limitations of the claimed invention except for the thermal developing apparatus comprising non-contact heating.

Naruse et al. discloses a light and heat developable color recording material to be exposed by a light source, e.g., a semiconductor laser diode, to form a latent image, which is developed by a heat development apparatus at about 50°C to 250°C, and then fixed at a lower temperature, wherein the heat development apparatus can be either a contact heating device, e.g., a heat roller, a heat drum, or a non-contact heating device, e.g., a far infrared lamp heater (col. 101, lines 17-25).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate a non-contact heating type development apparatus emitting far infrared rays in the device of Mouri et al. as taught by Naruse et al. since Naruse et al. teaches this to be well known in the printing art to use any suitable heat developable device type.

6. Claims 23, 36, 73-74, 76-77, 84 rejected under 35 U.S.C. 103(a) as being unpatentable over Mouri et al. in view of Nomura et al. and Naruse et al.

Mouri et al. discloses an image forming apparatus including a photosensitive cartridge (13) for housing the light and heat sensitive recording material (photo-sensitive and heat-developing material 11) to be supplied to the imaging exposure portion (2) located further downstream where the photo-sensitive and heat-developing material is imagewise exposed by the laser exposure means (10), a further downstream heating developing portion (3) where the photo-sensitive and heat-developing material is subjected to heating development at 120° C, and the fixing unit (whole-surface exposure portion 4) where the photo-sensitive and heat-developing material is subjected to fixing by exposure from a light source (22).

Mouri et al. does not explicitly specify the wavelength of the light source of the fixing unit, meaning that a light source of any appropriate wavelength could be used for the fixing unit. Mouri et al. also fails to teach the light fixing having an intensity so as to provide an illumination of 10,000 to 50,000,000 lux.

Nomura et al. discloses a light and heat-sensitive recording material being supplied and a method for recording an image, which comprises exposing the light and heat-sensitive recording material to light, heat developing and fixing the recording material, wherein the light sources used for fixing images includes fluorescent lamps, a white or visible light, wherein the illumination of the light fixation would be set at 32,000 lux (col. 27, lines 59-65).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate a light source emitting a visible light in the fixing unit of Mouri et al. as taught by Nomura et al. since any light source is acceptable in the device of Mouri et al. The motivation for doing so would have been to provide an inexpensive and easy to use light source as a fixing unit.

Mouri et al. also fails to teach the thermal developing apparatus comprising a far infrared heat source.

Naruse et al. discloses a light and heat developable color recording material to be exposed by a light source, e.g., a semiconductor laser diode, to form a latent image, which is developed by a heat development apparatus at about 50°C to 250°C, and then fixed at a lower temperature, wherein the heat development apparatus can be a contact heating device, e.g., a heat roller, a heat drum, or a non-contact heating device, e.g., a far infrared lamp heater (col. 101, lines 17-25).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate a heat development apparatus emitting far infrared rays in the device of Mouri et al. as taught by Naruse et al. since Naruse et al.

teaches this to be well known in the printing art to use any suitable heat developable device type.

Mouri et al. further teaches the image exposure unit provided with a light source that includes laser, LEDs, fluorescent lamp, whose wavelength would range anywhere from 300 to 1100 nm, the recording material having compositions with sensitivity at 300 to 370 nm, the heating developing portion developing the recording material with a heating temperature of 120° C, and the image recording relates only to processing of a single sheet (the recording material being cut into single sheets by the cutter 16) (see also col. 3, lines 49-52). Mouri et al. further teaches the cartridge or casing section, the optical recording portion (2), the developing portion (3) and the fixing portion (4) being arranged in a vertical configuration (Fig. 1).

7. Claims 98, 105 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mouri et al. in view of Nomura et al. and Naruse et al., and Nakao et al.

Mouri et al., as modified, discloses all the basic limitations of the claimed invention except for the second light source whose intensity maximum wavelength is different from that of the first light source.

Nakao et al. discloses a color thermal printing system comprising either a single exposure light source (23) or two exposure light sources (23 and 31) for exposing the light and heat sensitive recording medium (10), the first light source (23) emitting ultraviolet rays of 420 nm wavelength to expose the yellow recording layer (24) while the second light source (31) emits near ultraviolet rays of about 365 nm to expose the

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magenta recording layer. Nakao et al. also discloses a cutter (39) located downstream to cut the recording medium into individual sheets, which are ejected onto the receiving tray (40).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the second exposure light source in the device of Mouri et al. as taught by Nakao et al. for the purpose of recording a full-color image and to also rearrange the cutter to downstream location as taught by Nakao et al. so as to keep the tension of the conveyed recording medium at the proper level during its exposure.

8. Claim 60 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mouri et al. in view of Nomura et al. and Nakao et al., as applied to claim 17 above, and further in view of Yamada et al. (U.S. 5,264,316).

Mouri et al., as modified, discloses all the basic limitations of the claimed invention except for the range of variation of the heating temperature of the thermal developing section being set at most 5° C.

Regardless, it is known in the printing art that the temperature distribution in a heat-developing device should be kept less than $\pm 1^{\circ}\text{C}$ as a requirement. Yamada et al., for example, discloses a heat-developable image recording material whose temperature distribution variation would be kept within a strict requirement of $\pm 1^{\circ}\text{C}$ during the heat development of the color latent image (see Table 1 and related discussion).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Mouri et al. with the temperature distribution variation limitation as taught by Yamada et al. for the purpose of providing a sharp color image.

9. Claim 75 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mouri et al. in view of Nomura et al. and Naruse et al., as applied to claim 23 above, and further in view of Yamada et al.

Mouri et al., as modified, discloses all the basic limitations of the claimed invention except for the range of variation of the heating temperature of the thermal developing section being set at most 5° C.

Regardless, it is known in the printing art that the temperature distribution in a heat-developing device should be kept less than $\pm 1^{\circ}\text{C}$ as a requirement. Yamada et al., for example, discloses a heat-developable image recording material whose temperature distribution variation would be kept within a strict requirement of $\pm 1^{\circ}\text{C}$ during the heat development of the color latent image (see Table 1 and related discussion).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Mouri et al. with the temperature distribution variation limitation as taught by Yamada et al. for the purpose of providing a sharp color image.

Allowable Subject Matter

10. Claims 7-11, 24-28, 30-34, 37-41, 43-47, 49-53, 55-59, 61-65, 67-71, 78-82, 85-89, 92-96, 99-103 and 106-110 are allowed.

Response to Arguments

11. Applicant's arguments with respect to claims 17, 23, 29, 35-36, 42, 48, 54, 60, 66, 72-77, 83-84, 90-91, 97-98, 104-105 and 111 have been considered but are moot in view of the new grounds of rejection presented in this Office action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (571) 272-1934. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM
PRIMARY EXAMINER

June 14, 2005